

O2 - NEW TRAINING METHODS AND THEIR IMPLEMENTATION IN MODERN VOCATIONAL EDUCATION

PROJECT NO 2014-1-EE01-KA202-000490



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Output 2 Phases

- Analysis of existing situation and needs

- As-Is and To-Be analyses (methodology, tools, support, and challenges)
- Summary of each As-Is and To-Be topics
- Best practice descriptions from each partner organization

- Literary review

- Novel learning methodologies identification based on literately review, internet search, and interviews
- The aim was to find practical methods instead of academic theories

- Evaluation of teaching methodologies

- Selected learning methodologies (13 pcs) which partners already use or which were found in literary review were evaluated assessment criteria. List of assessment criteria is created from analysis of existing needs information and O1 interview results.

- Methodology selection to O3 phase



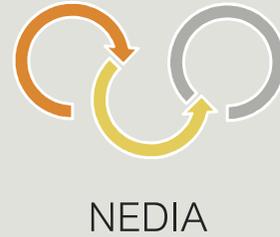
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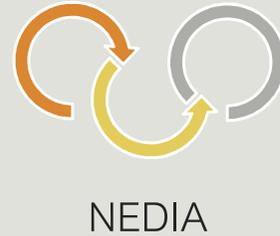
Innovative Manufacturing Engineering
Systems Competence Centre

Analysis of existing situation and needs As-Is and To-Be analyze in partner organization



<p><u>Methodology (As-Is)</u></p> <ul style="list-style-type: none"> - Class room teaching - Etc. 	<p><u>Support and motivation (As-Is)</u></p> <ul style="list-style-type: none"> - Student counsellor - Curator - Etc. 	<p><u>Methodology (To-Be)</u></p> <ul style="list-style-type: none"> - Students responsibility and involvement should be increased in daily school work - Etc.
<p><u>Tools (As-Is)</u></p> <ul style="list-style-type: none"> - Vocational books - Etc. 	<p><u>Challenges (As-IS)</u></p> <p>Students:</p> <ul style="list-style-type: none"> - Motivation - Etc. <p>Teachers:</p> <ul style="list-style-type: none"> - Maintaining of work life knowledge and skills <p>Economical limitations:</p> <ul style="list-style-type: none"> - Unit price (financial compensation per student) - Etc. 	<p><u>Tools (To-Be)</u></p> <ul style="list-style-type: none"> - Distance learning / e-learning - Etc.

Summaries of As-Is and To-Be analyze in partner organizations (1/2)



Methodology (As-Is)

“Teaching takes place in different environments and seems partly to be quite traditional. However practical teaching, combination of theory and practice, and relationship with different stakeholders are appreciated.”

Methodology (To-Be)

“Students’ involvement and responsibility has to be increased in learning process. Students’ motivation has to be increased. Students’ different needs has to be consider, some students need special pedagogy and other students want to make fast progress and they need lots of challenges.”

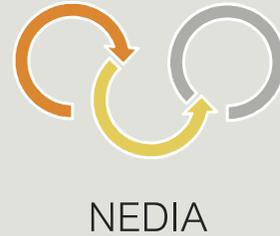
Tools (As-Is)

“Tools are from traditional books to e-learning environment and equipment sets. Variation is large. Aspiration is to combine theory and practice.”

Tools (To-Be)

“Tools should be modern and motivational which enable reflection. Tools should be visual which combine theory and practice. Tools should allow slow or fast progress in studies.”

Summaries of As-Is and To-Be analyze in partner organizations (2/2)



Support and motivation (As-Is)

“In some organizations are used support staff who support and assist students and teachers.”

Challenges and problems (As-Is)

Students:

“In general students’ motivation is low and they have many kind of learning problems. Other challenge is that variation is high and there are also very talent students in the same student group. It should be possible to give bigger challenges for talent students. Mechanical engineering is not attractive for many young people.”

Teachers:

“Teachers should be up to date what is going on in industry and with the latest technology.”

Economical limitations:

” Lack of money may hinder development.”



Literary review

Table 2 New learning methodologies based on literately review, internet search, and interviews

Methodology	Short description and limitations	Reference	Notes
Phenomenon-based learning <i>(ilmiöpohjainen oppiminen)</i>	<p>In a phenomenon –based learning and teaching basis is holistic real world’s phenomenon. Phenomenon is viewed and observed as a whole in a real context. There are not any subject related borders in a phenomenon examination.</p> <p>Basic difference between phenomenon-based learning and traditional learning is that subjects and things are not split as relatively small and disconnected pieces.</p>	<p>PowerPoint presentation of Aki Luostarinen, Otava Opisto, 2012</p> <p>https://sites.google.com/site/ilmioopas/home</p>	<p>According to recent Finnish articles phenomenon-based learning is suitable for talent students</p>
Project learning (active learning, learning by doing) <i>[Projektioppiminen (toiminnallinen oppiminen, tekemällä oppija)]</i>	<ul style="list-style-type: none"> - Learning takes place together with other students who have the same target to solve some problem according to a plan (targets, schedule, job assignments and resources). - Projects can be from small to very large projects. In small projects may be few students and in larger projects can be a group of students, and even the whole school who executes projects together with 	<p>Lupa kokeilla, erilaiset tavat toteuttaa opetusta ammatillisella toisella asteella (<i>“Permission to try, different ways to carry out teaching in vocational secondary schools”</i>), ISBN 978-952-5892-35-2</p>	<ul style="list-style-type: none"> - Teacher’s role is enabler, supporter, person who clarifies the target, and builds bridge between different opinions - Students equal involvement and work load has to assure through the project phases - One small project example is building of RC-car. It was used 4 hours per a week during six week. - Other example is NY 24h leiri (Young entrepreneur 24 hours camp) where students learn by

An example of literary review table

Evaluation of teaching methods



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Table 3 Evaluation table how well teaching methodology fulfill specified requirements.
 (+) means that methodology fulfill requirement
 (-) means that methodology doesn't fulfill requirement
 (o) means that requirement is not valid for the methodology or it may vary case-by-case
 (?) means that this is unclear

	Combines theory and practice, and visual	Improves students' motivation	Increases students' involvement and responsibility	Consider different kind of learning problems (visualization problems, dyslexia, mathematical problems, concentration problems, etc.)	The studying is independent of location	Student group which is homogenous, some students need more support and time and some students need more challenges	Allows slow or fast progress in studies	Teachers should be up to date with the latest technology and what is going in the industry --> co-operation with industry	Co-operation with other secondary schools, university of applied science, and universities	Notes and limitations (See below notes)
Methodology										
Blended learning	+	+	+	+	+/o	+/o	o	o	o	
Phenomenon-based learning	+	+	+	o	+	?	?	o	o	1)
Project learning	+	+/o	+	o/?	+/o	+/o	+/o	+/o	+/o	
Simultaneous teaching	+/o	+	+/o	+	o	+	+/o	o	+/o	
Extended on-the-job-learning period	o	+	+	+	+/o	+	+/o	+	o	2)
Long work shop periods	+/o	+	+	+	+/o	+/o	+/o	o	o	2)

An example of evaluation table

- 13 pcs methodologies and 9 pcs assessment criteria
- Some of the assessment criteria are extensive and they could be split to several smaller

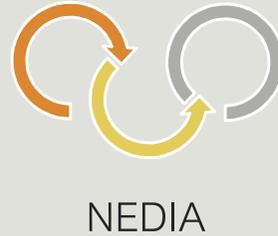
Methodologies' assessment criteria



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- Combines theory and practice, and visual
 - Improves students' motivation
 - Increases students' involvement and responsibility
 - Consider different kind of learning problems (visualization problems, dyslexia, mathematical problems, concentration problems, etc.)
 - The studying is independent of location
 - Student group are not always homogenous, some students need more support and time and some students need more challenges
 - Allows slow or fast progress in studies
 - Teachers should be up to date with the latest technology and what is going in the industry --> co-operation with industry
 - Co-operation with other secondary schools, university of applied science, and universities

Methodology selection to Output 3 phase



There were several high scored methodologies which would be suitable for O3 phase. One limitation was duration of the NEDIA project.

It was agreed that each partners don't need to use the same methodology and they can select to O3 phase High scored methodology that is the most suitable in their organization

The most important assessment criteria for the methodology was improvement of student's motivation, increasing of student's involvement and responsibility, combination of theory and practice, and visualization. It was recommended to consider these issues very high in methodology selection.

Thank You!

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